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| 10/034,388 | 12/28/2001 | Luying Sun | POLICE 3.0-001 | 8729 |

7590 05/25/2004
Patrick Higgins Esq.
100 Thanet Circle
Suite 306
Princeton, NJ 08540-3674

EXAMINER

CANTELMO, GREGG

ART UNIT PAPER NUMBER

1745

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

27

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/034,388 | SUN, LUYING | |
| | Examiner | Art Unit | |
| | Gregg Cantelmo | 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the amendment received March 8, 2004:
 - a. Claims 1-13 have been cancelled as per Applicant's request. Claims 13-25 are pending. The claims have been further amended which permits new grounds of rejection necessitated by amendment and finality of this office action;
 - a. The obviousness double patenting rejection to U.S. patent No. 6,572,955 is withdrawn in light of the terminal disclaimer;
 - b. The obviousness double patenting rejection to Sun '828 stands.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 15, 16 and 22-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims set forth weight percentages of various constituents but fail to define what other weights in conjunction with the particular materials in respective claims 15, 16 and 22-23 define the total weight from which the claimed percentage is determined.

Claim 22 is indefinite the range of weights in claim 22 exceeds and fall short of 100%. For example taking the maximum values of each component in the claim (90%

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vinyl acetate and 75% ethylene) arrives at a total weight percentage of 165%. It would appear that the weights of each are inversely proportional, such that as the weight content of vinyl acetate increases from 25-90%, the ethylene decreases from 75%-10%, wherein the total weight percent of the combined vinyl acetate and ethylene is 100%. However the written claim does not clearly recite such.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14, 21-22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,197,148 (Shinomura).

Shinomura discloses a separator which is used in a battery (a battery inherently comprising a positive electrode, negative electrode, electrolyte and porous separator membrane), wherein the membrane comprises a hot-melt adhesive and an engineering plastic (abstract, col. 1, ll. 5-9 and col. 2, ll. 30-40). The adhesive and engineering plastic are mixed in a molten state and thus provides a homogeneous mixture (note that the instant claims lack recitation to the degree of homogeneity as applied to claims 14).

With respect to claim 21:

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of

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a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

“The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

Claim 21 is void of any characteristics or particular features which are only obtained through heat activation. The prior art of record provides a microporous membrane in the same manner as claim 14 and binds the membrane to the electrodes. Therefore the prior art of record has the same claimed configuration.

The adhesive is an ethylene/vinyl acetate copolymer having a melt index of 0.2 to 500 and containing 2 to 50% by weight of a vinyl acetate unit; an ethylene/acrylic acid copolymer containing 2 to 50% by weight of an acrylic acid unit (col. 4, ll. 35-45 as applied to claim 22).

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The engineering plastic can be polymethyl methacrylate (prior art claim 9 as applied to claim 24).

Response to Arguments

6. Applicant's arguments with respect to claims 14, 21, 22 and 24 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 4,197,148 (Shinomura) in view of Adachi, U.S. patent No. 5,928,812 (Xue) and U.S. patent No. 5,846,673 (Saidi).

The differences not yet discussed are of the tackifier being poly(vinylidene fluoride-hexafluoropropene) in an amount up to 50% by weight.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Shinomura by adding a

tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

Xue (col. 4, ll. 41-58) discloses that the binding polymer (i.e., a tacking agent) used in the electrodes and separator elements is preferably a thermoplastic polymer and may be any suitable copolymer, but is preferably and commonly, in commercial cells, a copolymer of poly(vinylidene fluoride)-hexafluoropropylene (or PVdF-HFP).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Shinomura by using PVdF-HFP as a binding or tacking agent since it would have provided a material having excellent binding properties and thus form a separator having improved mechanical characteristics. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Saidi discloses adding PVdF-HFP binder (i.e., a tacking agent) to the separator in a weight percent of less than 50% (col. 12).

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. *In re Boesche*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 4,197,148 (Shinomura) in view of U.S. patent No. 4,085,241 (Sheibley).

A filler such as calcium carbonate, silicon dioxide, titanium dioxide, and calcium carbonate can be added to the mixture (Shinomura col. 14, ll. 37-42).

The difference between instant claim 16 and Shinomura is that Shinomura does not disclose the average particle size or weight% of the filler.

An inorganic filler is added to separators in a weight percentage of less than 50% by weight and has an average particles size ranging from 0.01-3 microns or from 0.1-20 microns(see Sheibley's abstract and col. 3, ll. 8-20 and 38-45 and col. 4, ll. 60-66).

The motivation for adding a filler as disclosed in Sheibley is that it produces pores in the separator thereby improving the conductivity of the separator (abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Shinomura by adding a filler as disclosed in Sheibley since it would have produced pores in the separator and thereby improved the conductivity of the separator.

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomura in view of U.S. patent No. 3,689,334 (Dermody).

The teachings of Shinomura with respect to claim 14 have been discussed above and are incorporated herein.

The difference between claim 23 and Shinomura is that Shinomura does not teach of the hot-melt adhesive of claim 23.

Alkyl acrylate hot-melt adhesives are known in the art for the purpose of securing metal materials to polymeric materials.

The motivation for using alkyl acrylate hot-melt adhesives is that it provides a suitable adhesive for binding metal materials to polymer materials.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Shinomura by using alkyl acrylate hot-melt adhesives is that it provides a suitable adhesive for binding metal materials to polymer materials. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

11. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 4,197,148 (Shinomura) in view of Adachi, all of record.

Shinomura discloses a separator which is used in a battery (a battery inherently comprising a positive electrode, negative electrode, electrolyte and porous separator membrane), wherein the membrane comprises a hot-melt adhesive and an engineering plastic (abstract, col. 1, ll. 5-9 and col. 2, ll. 30-40 as applied to claim 25).

The difference between the instant claims identified herein and Shinomura is that does not teach of a tackifier (claims 14 and 25).

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Shinomura by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

Response to Arguments

12. Applicant's arguments with respect to claims 15, 16 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Radovanovic in view of U.S. patent No. 4,985,317 (Adachi).

Radovanovic discloses a lithium ion battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous material and the second polymer material is a melt polymer (abstract, and col. 9, ll. 45-60 as applied to claim 14).

The difference between claim 25 and Radovanovic is that Radovanovic does not teach of adding a tackifier.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes (col. 8, ll. 41-47).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Radovanovic by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '617 in view of U.S. patent No. 4,985,317 (Adachi).

EP '617 discloses a lithium ion battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous sheet and an adhesive therein (abstract, page 2, ll. 9-11 and 29-44; page 4, Table II and lines 31-33 as applied to claim 25).

The difference between claim 25 and EP '617 is that EP '617 does not teach of adding a tackifier.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of EP '617 by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

15. Claims 14, 17-21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP '796 in view of U.S. patent No. 4,985,317 (Adachi).

EP '796 discloses a lithium ion battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane

comprises a microporous sheet and an adhesive therein. The adhesive is dispersed throughout the polymer (paragraph [0011]) and thus is a homogenous mixture of the plastic and adhesive (as applied to claims 14 and 25).

The battery is a lithium ion battery and thus the positive electrode is a lithium-ion positive electrode (abstract and paragraph [0003] as applied to claim 17).

The battery is a lithium ion battery and thus the negative electrode is a lithium-ion negative electrode (abstract and paragraph [0003] as applied to claim 18).

The battery is a lithium ion battery and thus the electrolyte ode is a lithium-ion electrolyte (abstract and paragraph [0003] as applied to claim 19).

The battery is a lithium ion battery electrolyte is a liquid lithium ion electrolyte or polymer lithium ion electrolyte (abstract and paragraph [0009] as applied to claim 20).

With respect to claim 21:

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

“The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale

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tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

Claim 21 is void of any characteristics or particular features which are only obtained through heat activation. The prior art of record provides a microporous membrane in the same manner as claim 14 and binds the membrane to the electrodes. Therefore the prior art of record has the same claimed configuration.

The difference between claim 25 and EP '796 is that EP '796 does not teach of adding a tackifier.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of EP '796 by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

16. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '796 in view of Adachi as applied to claim 14 above, and further in view of U.S. patent No. 5,928,812 (Xue) and U.S. patent No. 5,846,673 (Saidi).

The difference not yet discussed is of the tackifier being poly(vinylidene fluoride-hexafluoropropene) in an amount up to 50% by weight.

Xue (col. 4, ll. 41-58) discloses that the binding polymer (i.e., a tacking agent) used in the electrodes and separator elements is preferably a thermoplastic polymer and may be any suitable copolymer, but is preferably and commonly, in commercial cells, a copolymer of poly(vinylidene fluoride)-hexafluoropropylene (or PVdF-HFP).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of EP '796 by using PVdF-HFP as a binding or tacking agent since it would have provided a material having excellent binding properties and thus form a separator having improved mechanical characteristics. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Saidi discloses adding PVdF-HFP binder (i.e., a tacking agent) to the separator in a weight percent of less than 50% (col. 12).

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. *In re Boesche*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '796 in view of Adachi as applied to claim 14 above, and further in view of Sheibley.

The difference between instant claim 16 and EP '796 is that EP '796 does not disclose the average particle size or weight% of the filler.

An inorganic filler is added to separators in a weight percentage of less than 50% by weight and has an average particles size ranging from 0.01-3 microns or from 0.1-20 microns(see Sheibley's abstract and col. 3, ll. 8-20 and 38-45 and col. 4, ll. 60-66).

The motivation for adding a filler as disclosed in Sheibley is that it produces pores in the separator thereby improving the conductivity of the separator (abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of EP '796 by adding a filler as disclosed in Sheibley since it would have produced pores in the separator and thereby improved the conductivity of the separator.

Response to Arguments

18. Applicant's arguments to the previous 103 rejections have been fully considered but they are not persuasive.

Applicant argues that Adachi discloses a solid electrolyte (rather than a membrane).

This argument is not persuasive since the solid electrolyte of Adachi is clearly in the form of a membrane.

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The purpose of adding a tackifier as disclosed by Adachi is to improve the adhesion between the various components of the cell. Therefore given the teachings of Adachi, it would have been well within the skill of the ordinary worker in the art to employ tackifier agents in the membranes and layers of an electrochemical cell to improve the adhesion between the various layers.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that the microporous membrane is homogeneous, of a specific amount of tackifier by weight and of a particular material) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim 25 does not include the homogenous limitation nor the amount of tackifier or type of tackifier and any arguments to these limitations are not germane to the claimed invention.

Terminal Disclaimer

19. The terminal disclaimer filed on January 22, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. patent No. 6,527,955 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Double Patenting

20. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

21. Claims 14-22 and 24-25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 and 10-11 of U.S. patent application publication No. US 2003/0152828 (Sun '828). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Sun '828 claims a battery comprising a positive electrode, negative electrode, electrolyte and a microporous membrane having a hot-melt adhesive, engineering plastics, tackifier and filler (claim 1 as applied to claims 14-16 and 25).

The positive electrode is a lithium ion positive electrode (claim 2 as applied to claim 17).

The negative electrode is a lithium ion negative electrode (claim 3 as applied to claim 18).

The electrolyte is a lithium ion electrolyte (claim 4 as applied to claim 19).

The electrolyte is a liquid lithium ion electrolyte or polymer lithium ion electrolyte (claim 5 as applied to claim 20).

The microporous membrane is bound to said at least one positive electrode and said at least one negative electrode by heat activation of said microporous membrane at a temperature from about 35 degree C to about 125 degree C and under a pressure from about 0.5 to about 100 psi (claim 6 as applied to claim 21).

The hot-melt adhesive is hot-melt adhesive is poly(ethylene-vinyl acetate) or poly(ethylene-alkyl acrylate) and has from about 25 to 90 weight % of vinyl acetate and from about 10 to about 75 weight % of ethylene (claim 10 as applied to instant claim 22).

The engineering plastics is selected from the group consisting of polysulfone, polycarbonate, poly(styrene-methyl methacrylate), and combinations thereof (claim 11 as applied to claim 24).

22. Claim 23 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 and 10-11 of Sun '828, as in view of Dermody.

The teachings of Sun '828 have been discussed above and are incorporated herein

The difference between claim 23 and Sun '828 is that Sun '828 does not teach of the hot-melt adhesive of claim 23.

Alkyl acrylate hot-melt adhesives are known in the art for the purpose of securing metal materials to polymeric materials.

The motivation for using alkyl acrylate hot-melt adhesives is that it provides a suitable adhesive for binding metal materials to polymer materials.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Sun by using alkyl acrylate hot-melt adhesives is that it provides a suitable adhesive for binding metal materials to polymer materials. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Response to Arguments

23. Applicant does not appear to have addressed this double patenting rejection. Therefore the rejection stands.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo
Primary Examiner
Art Unit 1745

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gc

May 20, 2004